

B4
Page 20, line 29, after "compensated." insert --In other words, there are k wavelengths in an absorbance subset of wavelengths, and n-k wavelengths in a scattering subset of wavelengths.--

B5
Page 23, line 27, after "wavelengths." insert --In Embodiment A, there are six wavelengths in the absorbance subset and one wavelength in the scattering subset. In Embodiment B, five wavelengths form an absorbance subset of wavelengths, and two wavelengths form a scattering subset.--

Page 34, line 18, change "six" to --five--.

B6
Page 35, line 7, after "br." insert --Thus, Embodiment C uses an absorbance subset of six wavelengths and a scattering subset of two wavelengths.--

B. Amendments To the Claims

Please add new claims 37-44:

1 --37. A method of determining the concentrations of a plurality of
2 k constituent components of unaltered whole blood, k being an
3 integer, comprising:

4 generating a plurality of n different substantially
5 monochromatic radiation wavelengths, where n is an

6 integer and $n > k$, k of said n wavelengths having been
7 selected to measure radiation absorption by said k
8 constituent components, and $n-k$ of said n wavelengths
9 having been selected to compensate for errors due to $n-k$
10 scattering factors in unaltered whole blood;
11 irradiating a sample of unaltered whole blood with said n
12 radiation wavelengths;
13 detecting intensities of said n radiation wavelengths after
14 passing through said sample of unaltered whole blood; and
15 *cont* calculating concentrations of said k constituent components of
16 *137* said sample of unaltered whole blood, corrected for the
17 effects of radiation scattering, as a function of said
18 detected intensities of said n radiation wavelengths.

1 38. The method of claim 37, said calculating step comprising:
2 calculating a vector of n optical densities of said sample of
3 unaltered whole blood, each optical density being a
4 function of a respective one of said n detected
5 intensities; and
6 calculating said concentrations of said k constituent
7 components using a set of n linear equations that equate
8 said vector of n optical densities with a linear
9 combination of k light absorbance vectors and $n-k$ light
10 scattering vectors, real coefficients of said k
11 absorbance vectors in said linear combination being equal
12 to said concentrations of said k constituent components.

1 39. The method of claim 38, wherein each of said k light
2 absorbance vectors corresponds to a specific one of said k
3 constituent components, the entries of each light absorbance vector
4 being extinction coefficients of a corresponding constituent
5 component at each of said n wavelengths.

1 40. The method of claim 38, wherein each of said n-k light
2 scattering vectors corresponds to an identifiable scattering
3 factor, said method further comprising, iteratively determining
4 each of said n-k scattering vectors as functions of said
5 concentrations of said k constituent components present in said
6 sample of unaltered whole blood.

Cont
B7
1 41. The method of claim 37, said calculating step comprising,
2 correcting said calculated concentrations of said k constituent
3 components for the effects of finite spectral bandwidth of the n
4 substantially monochromatic wavelengths on the extinction
5 coefficients corresponding to each constituent component.

1 42. The method of claim 37, said generating step comprising:
2 selecting four radiation wavelengths by computing an error
3 index for each of HbO_2 , HbCO and Hi as the sum of the
4 absolute values of the errors that are induced in the
5 measurement of relative concentrations of HbO_2 , HbCO and
6 Hi due to a change in optical density measurements; and